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1 RECORD OF ORAL HEARING
2 UNITED STATES PATENT AND TRADEMARK OFFICE

3 _____
4 BEFORE THE BOARD OF PATENT APPEALS
5 AND INTERFERENCES
6 _____

7 *Ex Parte* MINEHIRO TONOSAKI, MOTOSUKE OHMI, EISAKU KATO
8 MASAKAZU YAJIMA and TAKASHI YAJIMA

9 _____
10 Appeal 2009-005609
11 Application 10/728,916
12 Technology Center 3700
13 _____

14 Oral Hearing Held: February 4, 2010

15 _____
16 Before WILLIAM F. PATE, III, JENNIFER D. BAHR, and
17 STEFAN STAICOVICI, *Administrative Patent Judges*.

18 APPEARANCES:

19 ON BEHALF OF THE APPELLANT:

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25
26

1 JUDGE PATE: Good morning, sir.

2 MR. KOSCHMIEDER: Good morning.

3 JUDGE PATE: We have looked at this case beforehand. I think
4 we're familiar with the technology involved, and we'd like to hear your
5 arguments about patentability.

6 MR. KOSCHMIEDER: Okay. I'll just start with a short overview on
7 the difference between the Kirshberg references and the other references in
8 the case, beginning first with the Steele reference. As you're aware, we're
9 claiming a micro heat-transport device, and I think what's key in that is the
10 word micro, so it is not a conventionally sized heat-transport device or some
11 kind of heat system but a micro heat-transport device. We look at
12 Kirshberg. Kirshberg appears to have some of the elements of our
13 invention. It's a CPL, a capillary-pumped loop device. The Examiner has
14 combined Steele with Kirshberg to -- as evidence of obviousness. If we look
15 at Steele, however, Steele is disclosing a composition which is applied to a
16 surface to thereby approve some heat transport or wettability characteristics.
17 The difficulty that we see with that combination is that Steele is applying a
18 composition which comprises let's say a silica in the form of particles.
19 Those particles are already a certain size. I believe they were 20- to
20 60-micron, if memory serves me correctly, and the minimum thickness of
21 that coating is 100 microns in Steele. Our point is that you wouldn't apply a
22 coating having a thickness of 100 microns to a micro device simply because
23 you would render the device of Kirshberg inoperable if you were to do so.
24 For example, you would block the capillary flow in Kirshberg. So that
25 really is the argument there, that if you were to combine the two, modifying
26

1 Kirshberg according to Steele, you essentially render Kirshberg inoperable,
2 and in short, that would be our argument for Kirshberg and Steele.

3 And our argument for -- are there questions with respect to that?

4 JUDGE PATE: No. I just -- it sounds like an argument based on, you
5 know, bodily incorporation, though. You know, the big crystals, you know,
6 you can't put the big crystals in, you know, here because -- we're not really --
7 we're using the teaching of the reference rather than bodily incorporating the
8 size of the articles.

9 MR. KOSCHMIEDER: But if you look at Steele as a whole, he is
10 applying -- has a minimum thickness of 100 microns, and it just doesn't
11 make sense to apply a coating of that thickness to a micro device. So I
12 understand your point about bodily incorporation, and our counterpoint
13 would be that making that modification of Kirshberg according to Steele
14 would render Kirshberg inoperable. So in that sense, we feel the rejection is
15 not supportable.

16 Now with respect to the combination of Kirshberg and Uchida, the
17 Uchida reference is describing a composition that is applied to a metal
18 substrate, and we have this micro heat-transport device, one -- at least one
19 portion of which has to be glass. Just to begin with we'd -- I'd like to make
20 the point that the difference between a glass substrate and the metallic
21 material of Uchida is that's -- it's a big difference, but we also want to point
22 out the difference just again in the relative let me call it dimensionality that
23 Uchida operates in versus our micro device. Uchida again is on a
24 conventional scale with a heat-transport device. We are on a micro scale,
25 and we've made the arguments during prosecution that while it may make
26 sense to make the modification in Uchida, that is improve wettability by

1 including some coating, if you go to the micro domain, now you're in a
2 completely different area of fluid flow, fluid dynamics, heat transfer. So
3 what may make sense on the -- let me call it the macro scale, the large
4 conventional scale of Uchida doesn't make sense, or you wouldn't -- one of
5 skill in the art wouldn't say it works on a big scale, so it's going to work on a
6 micro scale. Our point is that there are substantial differences. Even the
7 layman knows that you can take a drop of water and lay it on say a glass
8 plate, and it beads up, and it certainly wouldn't flow through a capillary
9 having a dimension in the micron range. So again, it's taking the teaching in
10 one dimension and trying to transfer that to an entirely different dimension
11 in the claimed invention. So on that ground, we think just generally on --
12 with respect to the independent claim, the combination of the references just
13 doesn't make sense. So that's -- that would be our first basis of argument
14 there, just with respect to the independent claim.

15 JUDGE STAICOVICI: In Kirshberg, Kirshberg itself teaches that to
16 apply a Teflon layer to the vapor line, and Teflon increases wettability. And
17 in Uchida, for example, passage actually says Teflon or other silicate for the
18 same purpose.

19 MR. KOSCHMIEDER: Then I would have to mention that we are
20 claiming that our coating is one of silicone dioxide, silicone nitride or
21 silicone carbide. I'm not sure how the teaching with respect to Teflon comes
22 in.

23 JUDGE STAICOVICI: Uchida says both silicone -- isn't silicone the
24 same as silicone dioxide, silica?

25 MR. KOSCHMIEDER: Silica, yes.

26

1 JUDGE STAICOVICI: Yes, and it's -- Uchida teaches silicate or
2 Teflon?

3 MR. KOSCHMIEDER: Did you say silicate or --

4 JUDGE STAICOVICI: Silicone dioxide. Yes, silicone dioxide or
5 Teflon?

6 MR. KOSCHMIEDER: Well, that may be --

7 JUDGE STAICOVICI: And Kirshberg teaches Teflon?

8 MR. KOSCHMIEDER: And Kirshberg is including that in the -- in
9 what portion of his device?

10 JUDGE STAICOVICI: Applied to the vapor line.

11 MR. KOSCHMIEDER: The vapor line. I apologize. I'm not really
12 ready to answer the question because I didn't -- don't recall that from
13 Kirshberg. Let me -- can you give me a cite for that, please?

14 JUDGE STAICOVICI: Yes, it's on page 2. It's paragraph -- right at
15 the top, paragraph 18.

16 JUDGE PATE: It starts at the first -- last line on page 1.

17 MR. KOSCHMIEDER: Okay, so what we have with -- he's referring
18 particularly to an assembled mono layer polymer. So we here -- whatever
19 they're putting on in Uchida is not going to be a mono layer polymer. It's
20 going to be a bulk Teflon, as you and I know, Teflon as would be applied,
21 for example, on a frying pan. That's something entirely different from an
22 assembled mono layer of a polymer. So my point again is we are working in
23 entirely different dimensional domain. Where in Uchida we're talking about
24 applying a bulk material, whereas here in Kirshberg we're talking about
25 something very different, an assembled mono layer polymer. And I --
26

1 Applicants contend that there is no -- that there is a substantial difference in
2 a mono layer polymer coating in comparison to a bulk polymer coating.

3 Does that answer your question?

4 With respect to the dependent claims, we'd like to draw the Board's
5 attention, for example, to Claim 32. In Claim 32, we are requiring that the
6 stable material is located between the glass and the refrigerant. So in this
7 claim, we actually require that our stable material, be it silicone dioxide,
8 what have you, must be in contact with the glass and separate the glass from
9 the refrigerant. I think that's especially relevant with respect to Uchida, for
10 example, where his substrate material, if you want to call that, his heat
11 transport or pipe is a metallic material. And this goes to kind of the
12 difference in the heart of our invention versus Uchida in another respect.
13 Uchida covers a metal to prevent ingress of the refrigerant material, that is
14 the heat liquid, whatever you wish to call it, into the metal of the pipe.
15 Whereas our invention we are excluding the exact -- we are excluding the
16 opposite, meaning we are blocking ingress of contaminants from the glass
17 into the heating fluid. So there is again a contrast and a contradiction
18 between the purpose and effect of our invention and that which is disclosed
19 in Uchida.

20 With respect to my earlier comments in regards to Steele, I'd like to
21 draw the Board's attention to Claims 49, 51 and 53. In Claims 49 and 51, we
22 recite particular dimensions for portions of the micro heat-transport device,
23 and again, this goes directly to the combination with -- between Kirshberg
24 and Steele. Using the coating of Steele in the device of Claim 49 and 51,
25 you just couldn't do it, because you would block the -- any fluid flow. And
26 likewise in Claim 53, Steele is describing a composition that contains some

1 particulate material in addition to other materials. Our Claim 53 requires
2 that the stable material consists of silicone dioxide which would necessarily
3 exclude the composition of Steele.

4 So in summary, I'd like to point out again that there is substantial
5 dimensional difference, that we work in entirely different domains between
6 Kirshberg and Uchida and Steele, and I think that is something the Applicant
7 would like the Board to take into consideration with respect to patentability.

8 JUDGE PATE: Okay, thank you.

9 MR. KOSCHMIEDER: Thank you.

10 JUDGE PATE: Any more questions?

11 MR. KOSCHMIEDER: Any more questions?

12 JUDGE BAHR: No.

13 JUDGE PATE: We have no more questions for you, so we're going
14 to take this case under advisement.

15 MR. KOSCHMIEDER: Great. Thank you.

16 JUDGE PATE: Do you have a card for the business -- I mean
17 business card for the court reporter?

18 MR. KOSCHMIEDER: Yes.

19 Whereupon, the proceedings, at 9:37 a.m., were concluded.